

REMARKS

Claims 42-53 were pending in the above-identified application. Claims 42-53 were rejected. With this Amendment, claims 42, 43, 44, 46, and 49 are amended, claim 54 is added and claims 52 and 53 has been cancelled. Accordingly, claims 42-51, and 54 are present and active in the above-identified application.

I. 35 U.S.C. § 103 Obviousness Rejection of Claims

Plastic waste materials are produced in increased amounts each year and therefore there is a huge demand for the development of technology to combat the environment pollution due to the leakage of harmful substances from disposal of these waste materials. There have been many attempts to refine polystyrene resins into a polyelectrolyte, to form a water-soluble polymer. However, none of previous method has been proven satisfactory for removing harmful substances contained in the waste materials.

The present invention is a cleansing processing agent that has superior properties to remove harmful substances contained in waste materials and provides a cleansing method using a cleansing processing agent. Applicants have discovered a cleaning processing agent containing a hydrolyzed polymer made from styrene, a conjugate diene and an acrylonitrile containing monomer. The agent made from a hydrolyzed polymer shows improved hydrophilicity and ionic adsorption as an excellent cleansing processing agent for the waste materials.

The Claims were rejected under 35 U.S.C. § 103(a) as being unpatentable over EP 0 818 474, EP 0 818 420, and Inagaki et al (US Patent No. 6,022,928) in view of DE 44 44 032, Elfine (US Patent No. 4,902,665), Monick et al (US Patent No. 4,765,908), Horton (US Patent No.

4,619,744) and Ramirez et al. (US Patent No. 4,219,416). Applicant respectfully traverses this rejection. Applicant discovered the polymer composition of a cleaning processing agent made from acrylonitrile groups and conjugated diene.

Inagaki in EP 0 818 474 (US Patent No. 6,022,928) describes a method of manufacturing a water soluble polyelectrolyte which is a sulfonated polystyrene resin, where the resin has been dissolved in a solvent composed of alicyclic compounds. EP 0 818 474 does not teach a polymer composition of a cleaning processing agent made from acrylonitrile groups and conjugated diene.

Inagaki in EP 0 818 420 provides a method, where a polymer is sufficiently dissolved into water to produce a polymer aggregating agent which is highly effective at purifying a suspension. EP 0 818 420 describes the inorganic pigments for suppressing gelation of the polymer electrolytes for better water solubility. However, while EP 0 818 420 discloses the non-ionic or cationic polymer aggregating agents, this reference does not teach the composition containing a polymer made from acrylonitrile groups and conjugated diene.

Ramirez et al. (US Patent No. 4,219,416) teaches a method to remove heavy metals from mining wastewater, and is specially drawn to a method for the recovery of tungsten and molybdenum. Horton (US Patent No. 4,619,744) discloses a recovery method for heavy metals from aqueous solutions, especially dilute aqueous solutions. Monick et al (US Patent No. 4,765,908) teaches a treatment composition and method for removing contaminants from wastewater in the form of a nonleachable sludge. Elfine (US Patent No. 4,902,665) teaches a method of treating a heavy metal containing and/or a radioactive metal-containing natural water

or liquid. However, this reference does not teach the composition containing a polymer made from acrylonitrile groups and conjugated diene.

Although the use of polyelectrolytes for treatment to remove heavy metals from different liquids and solids including waste water is known in the art, none of cited references suggest a composition of hydrolyzed polymer containing acetonitrile groups and conjugated diene.

Accordingly, Applicants submit that the claimed invention is neither anticipated by, nor obvious over, the applied references, either alone or in combination. In view of the foregoing, it is submitted that the pending Claims are patentable over the applied references. Withdrawal of these grounds of rejection is respectfully requested.

II. Conclusion

In view of the above amendments and remarks, Applicant submits that all claims are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect.

Respectfully submitted,

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Dated: December 17, 2003